

CLAIMS

[1] A content reproduction device that performs streaming reproduction of a content, said device comprising:

5 a plurality of communication units, each being operable to receive a content transmitted in segments from a content transmission device over a communication path;

10 a content reconstruction unit having a buffer in which each segmented data of the content received by each of said communication units is temporarily accumulated, and operable to reconstruct each segmented data accumulated in said buffer into the content;

15 a reproduction unit operable to extract the content from said buffer at a predetermined bit rate and to reproduce the content at the predetermined bit rate, the content having been reconstructed by said content reconstruction unit; and

a communication control unit operable to:

20 calculate, for every predetermined time, target transmission speeds to be assigned for content reception performed by said respective communication units, based on free space in said buffer and the bit rate; and

transmit a first request signal indicating the calculated target transmission speeds to the content transmission device via one of said communication units.

25 [2] The content reproduction device according to Claim 1, wherein the first request signal indicates addresses for said respective communication units.

30 [3] The content reproduction device according to Claim 1, wherein the first request signal is a content obtainment command indicating addresses for said respective communication units.

[4] The content reproduction device according to Claim 1, further comprising

a communication fee storage unit which stores, in advance,
5 communication fees of said respective communication units,

wherein said communication control unit is operable to determine the target transmission speeds of said respective communication units based on the communication fees.

10 [5] The content reproduction device according to Claim 1, further comprising:

a present position detection unit operable to detect a present position;

a traveling route obtainment unit operable to obtain a
15 traveling route starting from the present position detected by said present position detection unit; and

a reception state storage unit which stores, in advance, data reception speeds of said respective communication units at each position on the traveling route obtained by said traveling route
20 obtainment unit,

wherein said communication control unit is operable to determine the target transmission speeds of said respective communication units based on free space in said buffer and the data reception speeds of said respective communication units at a
25 position indicated by information on a planned transit position after the present position, the data reception speeds being stored in said reception state storage unit.

[6] The content reproduction device according to Claim 5, further
30 comprising

a reception speed measurement unit operable to measure data reception speeds of said respective communication units,

wherein said communication control unit is operable to:
calculate modified target transmission speeds, each being
calculated based on a difference between the target transmission
speed assigned for the content reception of each of said
communication units and each of the data reception speeds
measured by said reception speed measurement unit; and

transmit a second request signal indicating the calculated
target transmission speeds to the content transmission device via
one of said communication units.

[7] A content transmission device that transmits a content over a
communication path, said device comprising:

a content accumulation unit operable to accumulate a
content;

a communication unit operable to communicate, over the
communication path, with a content reproduction device that
includes a plurality of communication units with different addresses;
and

a content segmentation unit operable to:

determine amounts of content data to be transmitted based
on target transmission speeds of the respective addresses every
time a first request signal indicating target transmission speeds of
the respective addresses is received, the amounts of content data to
be transmitted being determined for the respective addresses;

segment the content accumulated in said content
accumulation unit; and

transmit each segmented data of the content addressed to
each of the addresses via said communication unit.

[8] A content reproduction method for performing streaming
reproduction of a content, said method comprising:

a plurality of communication steps, in each of which a content

transmitted in segments from a content transmission device over a communication path is received;

a content reconstruction step of temporarily accumulating, in a buffer, each segmented data of the content received in each of said communication steps, and reconstructing each segmented data accumulated in the buffer into the content;

a reproduction step of extracting the content from the buffer at a predetermined bit rate and reproducing the content at the predetermined bit rate, the content having been reconstructed in said content reconstruction step; and

a communication control step of:

calculating, for every predetermined time, target transmission speeds to be assigned for content reception performed in said respective communication steps, based on free space in the buffer and the bit rate; and

transmitting a first request signal indicating the calculated target transmission speeds to the content transmission device using one of said communication steps.

[9] A content transmission method for transmitting a content over a communication path, said method comprising:

a communication step of communicating, over the communication path, with a content reproduction device that includes a plurality of communication units with different addresses; and

a content segmentation step of:

determining amounts of content data to be transmitted based on target transmission speeds of the respective addresses every time a first request signal indicating target transmission speeds of the respective addresses is received, the amounts of content data to be transmitted being determined for the respective addresses;

segmenting the content accumulated in a content

accumulation unit; and

transmitting each segmented data of the content addressed to each of the addresses using said communication step.

- 5 [10] A program for a content reproduction device that performs streaming reproduction of a content, said program causing a computer to execute the steps included in the content reproduction method according to Claim 8.
- 10 [11] A program for a content transmission device that transmits a content over a communication path, said program causing a computer to execute the steps included in the content transmission method according to Claim 9.